

Biospheric Sciences Highlights for July - August 2003

** Landsat and Fluorescence presentations at IGARSS03

Dr. Jim Irons (Code 923) gave several presentations on Landsat 7 and the Landsat Data Continuity Mission (LDCM) at the IEEE International Geoscience and Remote Sensing Symposium 2003 (IGARSS'03) in Toulouse, France during the week of July 21. The first presentation was titled "The First Four Years of the Landsat 7 Mission; A Review" and was presented on behalf of Darrel Williams. Jim also chaired the associated session on Land Use and Land Cover. The second presentation was titled "Data Specifications for the Landsat Data Continuity Mission." Iron's final presentation was titled "Landsat Data Continuity Mission: Creating a Unique Government-Industry Partnership for Global Research" and was given on behalf of Doug McCuiston, former LDCM Project Manager at GSFC and current Director of Program Planning, Code YF, at NASA HQ. Jim also co-chaired another session on Soil and Vegetation Biophysical Properties.

Dr. Betsy Middleton also presented a paper at IGARSS'03 in a Special Session on Vegetation Fluorescence entitled "Foliar Reflectance and Fluorescence Responses for Plants Under Nitrogen Stress Determined with Active and Passive Systems".

** GLOBE planning meeting designing Intensive Field Campaign

Dr. Elissa Levine attended the GLOBE planning meeting to design an Intensive Field Campaign in Iowa called GLOBE ONE. GLOBE ONE would examine effects of land use and land cover change on water, energy, and carbon budgets using characterization, monitoring, and modeling techniques. Land use/land cover categories include corn, soybeans, Conservation Reserve Program(CRP) land, restored prairie, remnant prairie, and urban within a triangle shaped area between Cedar Rapids, Des Moines, and Waterloo. Research questions in the areas of hydrology, soils, phenology, bird migration, and remote sensing science were discussed at the planning meeting, and a "White Paper" was developed to describe the project design and plans. All data will be collected as a partnership between scientists and teachers and students from local Iowa schools who are part of the GLOBE program using GLOBE protocols. In addition to providing important scientific information and results, this project will be a prototype for inquiry-based education to learn integrated Earth system science concepts.

** Portable Airborne Laser System and BioSAR data collected over Tennessee, Ohio and North Carolina

Ross Nelson (923) traveled to Oak Ridge TN, Columbus OH, and New Bern NC 7/8 - 7/23 to fly his Portable Airborne Laser System (PALS) along with BioSAR, a low frequency (80-120 MHz) radar developed by Marc Imhoff (923). Radar and laser data were acquired over 19 plots and 4 transects in Oak Ridge; in addition a 3.2 x 12.8 km area was mapped on the Oak Ridge National Laboratory grounds. 17 forested stands were flown on American Electric Power lands in eastern Ohio, and 41 plantation blocks were flown on Weyerhaeuser lands in North Carolina. Both systems are specifically designed to measure and monitor above-ground forest biomass and carbon remotely. BioSAR collects volumetric radar responses in 6 FM-band channels; PALS measures tree heights, height variability, and canopy closures. In addition, the PALS measurements of distance to ground will be used by the radar group to correct the BioSAR radar responses as a function of range to target. Nelson will be working with Dr. Robin Graham (ORNL) to determine if the fused lidar and radar data sets improve remote biomass estimates.

** Ungar named as new chair-designate for the Working Group for Calibration and Validation by the Committee on Earth Observing Systems Secretariat

Dr. Stephen Ungar, Code 923, was recently named as the new chair-designate for the Working Group for Calibration and Validation (WGCV) by the Committee on Earth Observing Systems (CEOS) Secretariat. Dr. Ungar will replace outgoing chair person Yves-Louis Desnos of the Earth Observation Applications Department of ESA-ESRIN (Frascati, Italy).

The CEOS Working Group on Calibration and Validation was established in 1984. This resulted from the recognition that calibration and validation activities should play a key role in all satellite Earth Observation missions to ensure the clear and quantitative understanding of the data they generate. The objectives of the WGCV are to enhance coordination and complementarity, to promote international cooperation, and to focus activities in the calibration and validation of Earth observations for the benefit of the CEOS members and the international user community.

**** In Tropics, Forests are Cool but Croplands are Hotter**

A study of Santa Cruz, Bolivia, which used NASA satellites and computer models, reported that cutting down tropical forests and converting grasslands to crops may inadvertently warm those local areas. According to the research, forest canopies create wind turbulence that cools the air, and native grasslands are better adapted to the tropics than crops, in ways that also have a cooling effect. A time series of Landsat data and the Simple Biosphere (SiB2) model were used to show that temperatures in January may have warmed on average by about 1 degree Fahrenheit in the last 25 years, solely because native forests and grasslands in Santa Cruz were replaced with crops.

A NASA press release <http://www.gsfc.nasa.gov/topstory/2003/0715bolivia.html> regarding the publication of this work--**Land use and local climate: A case study near Santa-Cruz, Bolivia**, L. Bounoua (Code 923), R.S Defries, M.L. Imhoff (Code 923), and M. K. Steininger, Journal of Meteorology and Atmospheric Physics--was posted on August 21, 2003 and was carried by several news media below.

SPACE DAILY: <http://www.spacedaily.com/news/earth-03za.html>

NATURAL WORLD TOURS (UK) :
<http://www.naturalworldtours.co.uk/articles2003/august/august2303d.htm>

NEWSNOW (UK):
<http://www.newsnow.co.uk/newsfeed/?search=tropics&name=&x=6&y=6>

SUPERCOMPUTING ONLINE:
<http://www.supercomputingonline.com/print.php?sid=4226>

SCIGUY: <http://sciguy.com/News/Article.asp?ArticleID=5398>